Advanced Cruise Control

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SUMMARY

We will show you how your car can automatically slow down in speed zones using your existing cruise control, just made better! It's fun, safe, and doesn't prevent speeding in any way.

Requirements:

1) Smartphone.

2) Some soldering.

This instructable links a database of speed limits called http://www.wikiSPEEDia.org to your car's existing cruise control. It will make your drive easier and more relaxing in ways you can't imagine. My wife has one, and even though women-hate-gizmos, she uses it every day!

Who am I? I designed the product at gpscruise.com. It was ahead of its time and a commercial failure, so I am publishing it here.

What will it cost? You can build this with about $20 in parts, and no microcontrollers!!! I learned long ago that cost is king, and that it is noble to be frugal and low-tech.

Get involved! If people ask questions, I will provide answers.

Will it work? Yes it will.

Here's the project in a nutshell.

Step 1: Get the special cellphone app that is already written and free. It drives the headphone jack with two tones when the speed changes.

Step 2: Buy or make a circuit to convert tones to relay signals.

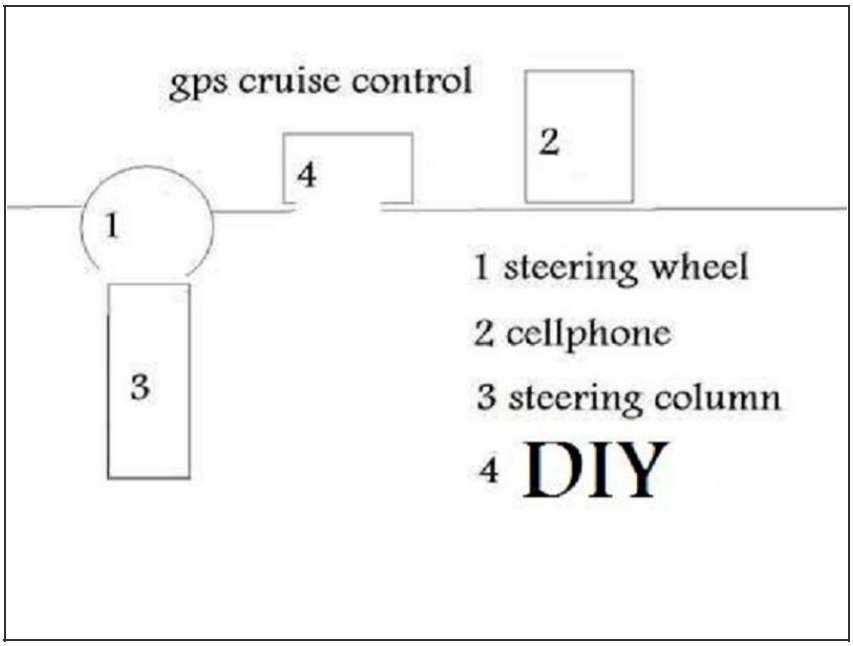
Step 3: Connect the relays to your existing cruise control. This step isn't as hard as it sounds.

That's it!

Email me for more details which you and I will add! It works, trust me. ON ANY CAR newer than 2000.

Email me with any questions: gpscruise@gmail.com

Step 1 — Advanced Cruise Control



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- Requirements: 1) Smartphone. 2) Some soldering.
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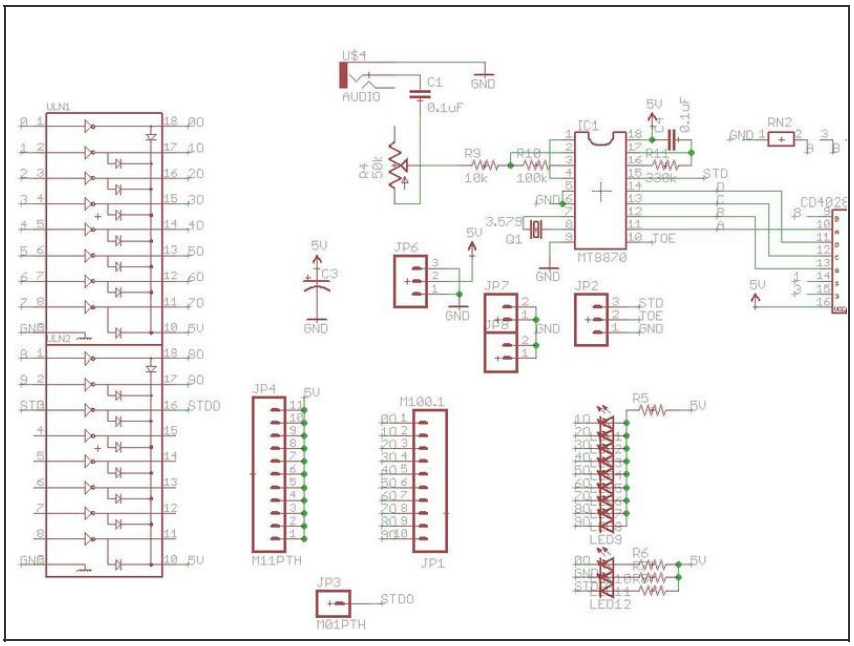
Step 2

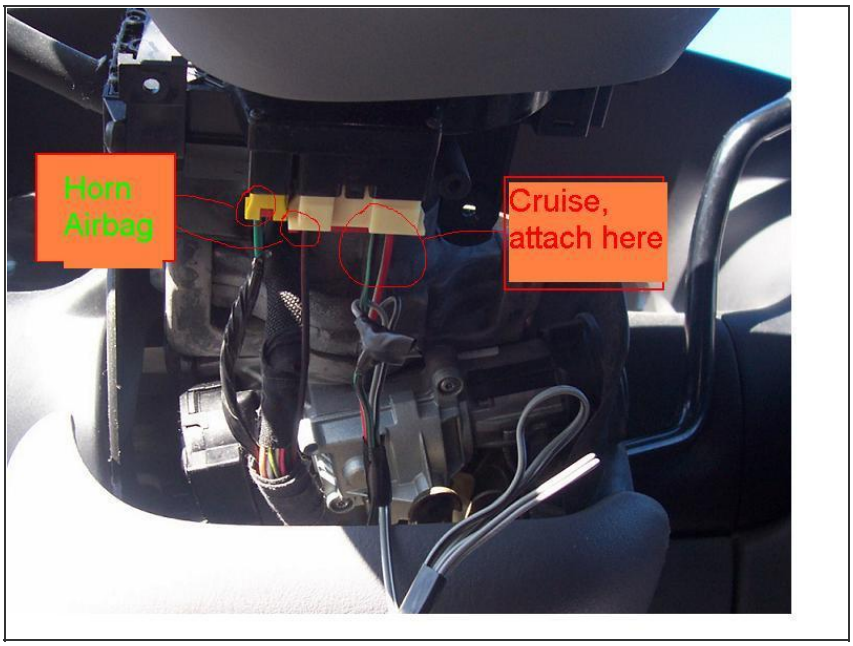


- Buy or build this board I copied from: http://www.razorconcepts.net. You can buy it from them or build it. (I want to design a cheaper version; one that doesn't need a PCB, just protoboard).
- This board, which I call the DTMF-PCB, has inputs: 1) Audio 2) +5vDC. This board outputs: 1) TTL levels when the audio is DTMF 0,1,...9,#,*
- These TTL levels have to connect to two relays or two optoisolators.
- The important thing is: When the DTMF tone comes to this board, it clicks in a relay that will simulate us pushing the SET/DECEL button on our existing cruise control circuit. Neat, huh?

Step 3

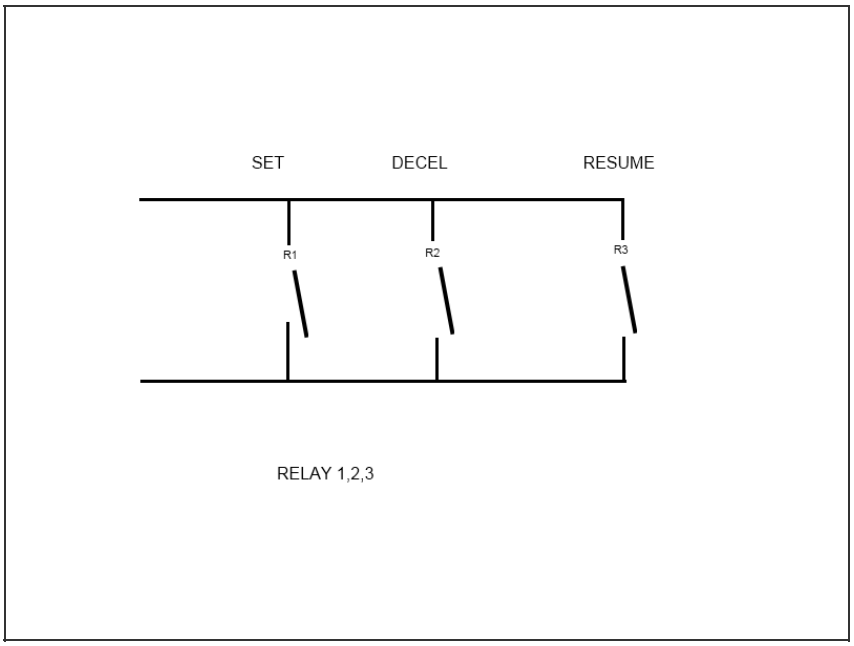
- Parts list (Digikey part no's)
- LM567CM (DTMF CHIP) [IC1] In stock, believe it or not, at Digikey as of Aug 2010
- X011-ND (3.579 xtal) [Q1]
- 3352T-503LF-ND (50k pot) [R4]
- P4307-ND(0.1uF) [C1]

Step 4



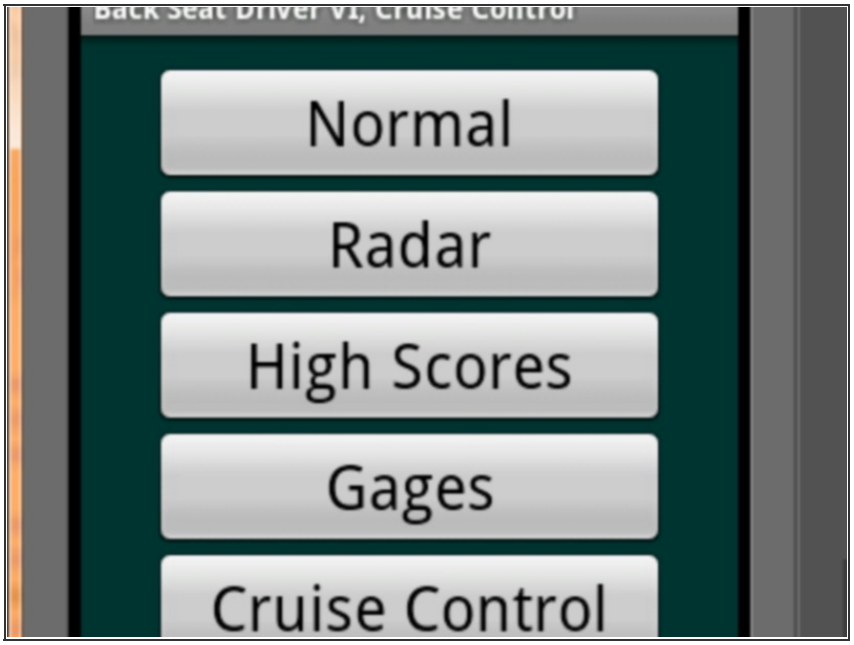
- Here's how to clip onto your car's cruise control.
- All car manufacturers use the same concept, resistors, but each manufacturer uses different resistors.
- There are several ways to figure out which wires to use, and what the resistor values are. There are four ways, but if you are lucky you will only need the first way. I have listed them in order of hardness, easy first.
- 1) First look here to see if your car is listed.
- or 2) Take apart your cruise-control buttons (in the steering wheel) and use an ohmmeter as you press the SET, DECEL, RESUME buttons. Trace the wires.
- or 3) go to the library and ask for the ALLDATA auto database. The big libraries like Memphis have it.
- or 4) contact me and I will figure it out using (3) above...

Step 5



- All cars use 2 wires for all the cruise functions: SET, DECEL, RESUME.
- You are going to tap onto the 2 wires.
- This is a parallel connection. Very testable, wouldn't you agree? The best part is, if the operator turns the cruise off, it's OFF. Very safe!

Step 6



- Get a smartphone app. I wrote the Android one.
- 1) Go to the Android Market, and get the FREE APP called "Back Seat Driver, CruiseControl".
- 2) Run that app and hit the Cruise Control button called "DTMF-0".
- With the headphone un-connected, you will hear your cellphone play the DTMF tone for the "0" key.
- Now you are ready to see if that DTMF-0 signal will fool your cruise control into thinking you hit the SET button...

Step 7

- 1) Using an audio cable, connect the cellphone's headphone jack to the DTMF PCB.
- 2) Convert 12V down to 5V somehow to power the DTMF PCB.
- 3) Put two relays on the DTMF PCB. (BIG MISSING STEP that I apologize for and will add ASAP!)
- 4) Connect the relays to your cruise-control 2-wire harness.

Step 8

- 1) On the Android application called "Back Seat Driver", hit the test button called DTMF-0.
- 2) Put an ohmmeter across the 2 cruise-control wires.
- 3) You should see the relays fake-out your cruise control and you should see the resistance jump to the right value; R1, R2, or R3.
- 4) Now it's time to drive the car and see if the SET button works.

Step 9

- After both SET and DECEL work,
- 1) Turn your cruise control on as you normally would.
- 2) Drive until you see the speed limit show up on your Android phone running the app called "Back Seat Driver".
- 3) Drive a little above the speed limit and you should hear the SET click on.
- Don't forget, you can listen to the SET signal by unplugging the headphone jack.
- Email me if you get stuck: gpscruise@gmail.com

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